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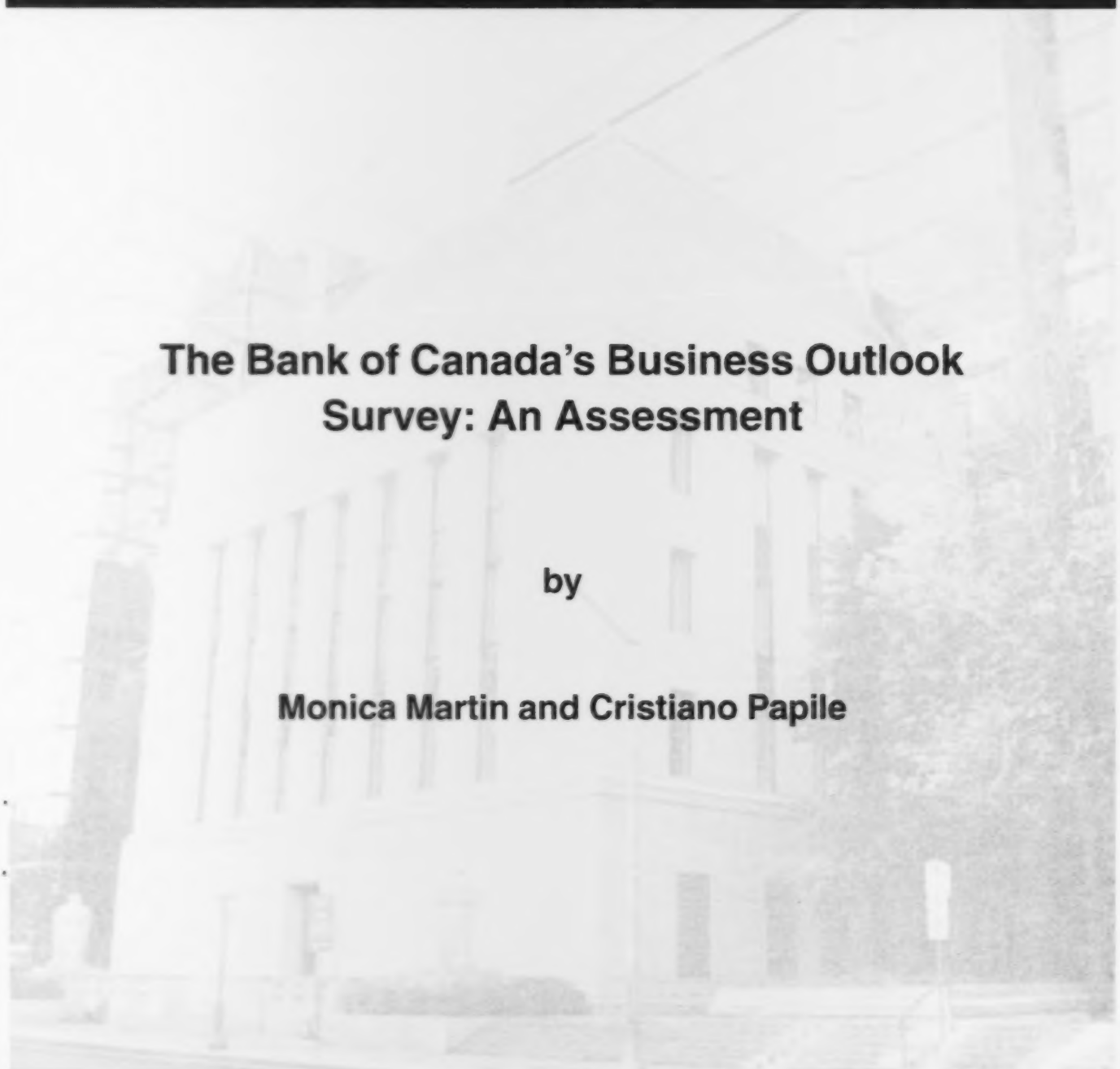
The Bank of Canada's Business Outlook Survey: An Assessment

by

Monica Martin and Cristiano Papile



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The views expressed in this paper are those of the authors.
No responsibility for them should be attributed to the Bank of Canada.

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Abstract

Since the autumn of 1997, the Bank of Canada's regional offices (located in Halifax, Montréal, Toronto, Calgary, and Vancouver) have conducted consultations with businesses across Canada on a quarterly basis. These consultations are now referred to as the Business Outlook Survey (BOS). The BOS provides a timely source of information on what businesses are experiencing and planning. Business consultations are timed to feed into the decision-making process that precedes the Bank's fixed dates for announcing monetary policy decisions. The consultations are structured around a questionnaire. Every quarter, 100 firms that reflect the diverse composition of the Canadian economy in terms of region, type of business activity, and firm size are interviewed. Because the BOS is a relatively new tool, the survey time series is short. The assessment presented in this paper, which is based on charts and correlations, is intended as an initial guide. The findings suggest that the survey serves as a barometer of the Canadian economy and provides leading signals of future activity. The interview responses also inform the Bank about production-capacity constraints, labour shortages, and inflation expectations.

JEL classification: E32, E66
Bank classification: Business fluctuations and cycles; Domestic demand and components

Résumé

Depuis l'automne 1997, les bureaux régionaux de la Banque du Canada, situés à Halifax, Montréal, Toronto, Calgary et Vancouver, mènent chaque trimestre des consultations auprès d'entreprises d'un bout à l'autre du pays. Maintenant désignée sous le nom d'enquête sur les perspectives des entreprises, cette initiative offre à la Banque un moyen de se renseigner rapidement sur les perceptions et les plans d'avenir des gens d'affaires. Afin que l'information recueillie puisse alimenter le processus décisionnel, le moment où l'enquête a lieu est déterminé par le calendrier arrêté pour l'annonce des décisions de politique monétaire. En s'appuyant sur un questionnaire, les bureaux régionaux interrogent chaque trimestre un groupe de 100 entreprises dont la composition par région, secteur d'activité et taille reflète celle de l'économie canadienne. Cet outil de consultation étant relativement jeune, les séries chronologiques ne sont pas très longues. Se fondant sur l'analyse de graphiques et de corrélations, l'auteure pose de premiers repères pour l'interprétation des données de l'enquête. Il ressort de son évaluation que l'enquête constitue un baromètre utile de la conjoncture économique au Canada et fournit des signaux avancés de l'activité future. Elle permet aussi à la Banque de réunir de l'information concernant les pressions s'exerçant sur la capacité de production, les pénuries de main-d'œuvre et les attentes d'inflation.

Classification JEL : E32, E66
Classification de la Banque : Cycles et fluctuations économiques; Demande intérieure et composantes

1. Introduction

In the autumn of 1997, the Bank of Canada's regional offices began a structured program of business consultations, now referred to as the Business Outlook Survey (BOS), extending the informal discussions that the Bank had always conducted with businesses, associations, and provincial governments. These consultations, which are structured around a survey questionnaire, collect information from businesses across Canada on demand and capacity pressures, and on their forward-looking views on economic activity. The face-to-face meetings facilitate a broader discussion of issues that firms are facing and allow for clarification of responses; they also allow the Bank to build a network of contacts.[1]

Even in the best of times, monetary policy decisions are made in a context of uncertainty about economic conditions, particularly the economic outlook.[2] To mitigate this uncertainty, the Bank gathers information from a variety of sources to develop as much insight as possible into current and prospective economic conditions. Particular attention is paid to measuring the output gap and to alternative measures of pressures on the economy's production capacity, since these are considered to be key determinants of inflation pressures and, therefore, of monetary policy decision-making.

The BOS results are presented quarterly to the Bank's Governing Council as part of the information that feeds into the monetary policy decision-making process.[3] The presentation provides insight into the business decisions that underlie the official economic statistics, as well as information on, and evidence of, what business people are seeing and planning.

In this paper, we describe the consultation process and the questionnaire, and provide an initial assessment of the information that is extracted from the data gathered during the visits with businesses.[4] Such information is analyzed on an ongoing basis at the Bank of Canada.

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1. An article summarizing this paper will be published in the spring issue of the *Bank of Canada Review* (Martin 2004).
2. See Jenkins and Longworth (2002) for a more detailed discussion of types of economic uncertainty.
3. Other information includes model-based projections, analysis of financial conditions, and an assessment of financial markets' expectations. For a description of this decision-making process, see Macklem (2002).
4. The Bank has described subsets of this survey data elsewhere. See Brady and Novin (2001) and Amirault and Lafleur (2000).

2. Using Survey Information

2.1 The value of surveys

Surveys provide a method of systematically gathering evidence on economic or business conditions from a representative sample of a particular population (for example, households or businesses). Economic surveys aim to gauge perceptions regarding current economic conditions and expected future activity. These perceptions are often measured qualitatively.

Surveys have a number of advantages over official statistical data:

- The timeliness of survey data, which is typically compiled and presented within weeks of gathering the information, is a major advantage over some other sources of economic data. Official statistics, particularly measures of economic activity such as gross domestic product (GDP), are often released with a lag of two to three months.

- Survey information can provide corroborating evidence on economic conditions. This may be of most value at times when there is increased uncertainty about other economic indicators, such as when there is an economic shock. A common hazard in interpreting business conditions is that initial estimates of economic data, particularly measures such as GDP, are often subject to significant revisions.

- Information on economic concepts that are difficult to measure or observe can be obtained using survey methods. For example, survey questions about production-capacity pressures and labour shortages provide timely indicators of output-gap pressures, a concept of special interest to monetary policy decision-makers. Survey results can be viewed as proxy measures of these concepts.

- Surveys provide a method of measuring business expectations about the future. Forward-looking information is particularly valuable in the context of monetary policy, given the lags in policy effects.

- The flexibility of the survey format allows for adjustments to the survey content. Special topics or supplementary questions can be added as new issues arise.

- The flexibility of the information-gathering process, such as the use of open-ended questions and personal interviews, can yield anecdotal evidence that provides a more nuanced view of economic developments.

Some disadvantages of surveys should also be considered:

- Surveys typically provide qualitative responses within a fairly narrow spectrum of choices. For example, responses are often recorded using a three-part scale, such as "higher," "the same," or "lower." This broad scale may capture large changes in activity or opinion, but may

not detect more subtle shifts in firms' experiences or expectations.

- Sampling errors present a common challenge. Low response rates can bias a sample. Too small a sample may not be representative of the underlying population.

- The accuracy of responses can be influenced by a variety of factors, including the effectiveness of the survey questions, the length of the survey, and the interest level of the respondent.

The Bank of Canada's BOS provides a flexible method for gathering timely information from a cross-section of regions and industries on topics of interest to the Bank. For example, businesses are asked for 12-month outlooks on their activities and two-year views on inflation. This horizon, which is longer-term than in many surveys produced outside the Bank, is helpful because of the long and variable lags in the effects of monetary policy.[5] The BOS consultations provide an opportunity to probe business reactions to new issues and to broaden the Bank's understanding of the likely impact of those issues.

Although the BOS does have advantages, it is not intended as a replacement for the numerous externally produced surveys of Canadian economic participants, which are regularly reviewed by Bank economists. Many of the external surveys are based on a larger sample of responses than the BOS, often using a mail-out or e-mail-based questionnaire (the personal interview format of the BOS allows for the two-way communication with respondents, but is more time-consuming, which limits the size of the sample for practical reasons). Some of the other surveys focus on a particular sector of Canadian business, gathering more detailed information than the BOS on the specific activities of their sector. Examples of other surveys of business activity are:

- **Canadian Federation of Independent Business (CFIB): Quarterly Business Barometer**
  Quarterly survey of CFIB members (predominantly small businesses)

- **Canadian Manufacturers and Exporters: Management Issues Survey**
  Annual survey of 400–500 small and medium-sized manufacturing and exporting firms

- **Conference Board of Canada: Index of Business Confidence**
  Quarterly survey of a cross-section of Canadian firms that is mailed to approximately 2,000 businesses

- **Export Development Canada: Trade Confidence Index**
  Semi-annual survey based on a random sample of approximately 1,000 Canadian businesses, providing responses from a cross-section of industries, regions, and firm sizes

5. The effects of changes in monetary policy are spread over a period of 12 to 24 months. For an overview of how monetary policy is transmitted, see Bank of Canada (2001).

- **Retail Council of Canada: Report to members**
  Occasional surveys of retail firms

- **Richard Ivey School of Business/Purchasing Management Association of Canada: Ivey Purchasing Managers' Index**
  Monthly survey of a panel of 175 purchasing managers selected to provide a geographic and industrial cross-section of Canadian firms

- **Statistics Canada: Business Conditions Survey**
  Quarterly survey of approximately 4,000 Canadian manufacturing firms, consisting of a questionnaire designed to obtain advance indicators of manufacturing trends such as production, unfilled orders, product inventories, and employment prospects

2.2 How other central banks use survey information

Central banks typically use surveys as one of many sources of information on business conditions and outlooks. There are a range of approaches and outputs. Some prepare surveys internally, which are often conducted by a network of regional offices. Others commission surveys for their own purposes or use externally prepared surveys. Still others use the same process as the Bank of Canada, combining internal and external survey results to complement official data and model-based projections in their decision-making.

In the United States, the Federal Reserve districts prepare the Beige Book, a description of economic conditions. It is produced eight times a year and is released approximately two weeks before every Federal Open Market Committee (FOMC) meeting. The Beige Book analyzes the current environment and draws on a variety of inputs, including surveys and anecdotal information gathered during conversations with companies. A recent evaluation of the Beige Book (Balke and Petersen 2002) determined that it contained significant information about current economic conditions. Indeed, the Federal Reserve's own commentary (Dynan and Elmendorf 2001) suggests that it has relied most heavily on the signals from the Beige Book during times of high uncertainty regarding initial estimates of GDP.

The Bank of England Agencies produce a confidential monthly analysis of regional economic conditions, which is presented to their Monetary Policy Committee (MPC). The Agencies also prepare a quarterly summary of business conditions, published in the *Inflation Report*. Information is gathered through company visits. A range of methods are used, including general discussions, targeted questioning on special topics, and surveys (Bank of England 2003). The Bank of England also uses external survey information as a source of information on business conditions (Bank of England 1999).

The Tankan (Short-Term Survey of Enterprises in Japan), produced by the Bank of Japan, is mailed quarterly to an extensive sample of approximately 9,000 businesses. The survey has a judgment component, which asks for qualitative responses on business conditions. A quantitative component obtains data on past sales and investment as well as forecasts. Interpretations of the Tankan results are included in the *Monthly Report of Recent Economic and Financial Developments*. The Bank of Japan has used the information obtained from the questions on production capacity and labour shortages as a supplementary indicator of output-gap conditions (Bank of Japan 2003).

The Reserve Bank of Australia (RBA) maintains four regional offices. As part of the process of evaluating economic conditions in the regions, the RBA's economists contact private and public sector firms and agencies to gather "economic intelligence." The evidence gathered is often more timely than official statistics or private sector surveys, and feeds into the RBA's monetary policy process (Reserve Bank of Australia 2003).

Members of the Reserve Bank of New Zealand (RBNZ) forecasting team conduct quarterly business consultations with about 50 businesses and business organizations across the country. Firms are asked about current trends and outlooks over the next year or so. This exercise is part of the RBNZ's quarterly projection process, contributing to their understanding of the current economic environment and providing insights that influence their outlook. The combination of information gathered from business contacts and external survey sources supplements available official data. A summary of the business discussions is presented to the Monetary Policy Committee and the RBNZ's Board (Reserve Bank of New Zealand 2004).

3. The Bank of Canada's Business Outlook Survey

3.1 The consultations

The BOS consultation process allows Bank of Canada economists to engage in two-way conversations with businesses about developments in the Canadian economy. The observance of utmost confidentiality encourages candid discussions on a wide variety of business issues. The publication of aggregate results respects the parameters of the Bank's confidentiality agreement with the firms.

The BOS is produced on a quarterly basis by the Bank's regional offices, which are located in: Halifax (representing Atlantic Canada), Montréal (Quebec), Toronto (Ontario), Calgary (the Prairies, Northwest Territories, and Nunavut), and Vancouver (British Columbia and the Yukon).

For each round of consultations, about 100 private sector companies are carefully selected to obtain a representative profile of the Canadian economy. The regional and industrial mix of companies approximates their representation in business sector[6] GDP. The businesses selected by each region reflect the composition of that region's GDP. A cross-section of small, medium, and large companies are interviewed.[7]

Participation is voluntary. If a selected company is unavailable, another suitable company is substituted, so that there are consistently 100 companies and the profile is maintained. No company is interviewed more than once a year, to avoid company fatigue with the process. This also allows the Bank to develop a broad base of industry contacts. A disadvantage of this approach is that changes over time in survey results may, in part, reflect sample turnover rather than changes in business conditions.

Meetings take place over a three-week period during each quarter. Typically, two economists from the Bank's regional offices conduct an interview with the chief financial officer or another senior officer of the company. The meetings are structured around the BOS questionnaire. Since the survey deals exclusively with Canadian activity, companies that have operations in other countries are asked to respond based on the experience of their Canadian operations. Consultations almost always take place in person, although telephone interviews are occasionally arranged to accommodate companies' schedules. This helps to ensure a common understanding of the questions and a better grasp of the issues facing the firm.

3.2 The questionnaire

The BOS questionnaire can be divided into four broad categories of core questions: (i) a question about past business conditions; (ii) questions that gauge the outlook for various aspects of business activity; (iii) questions that evaluate the pressures on firms' production capacity; and (iv) questions that measure firms' outlook for wages, prices, and inflation. The categories are summarized below.

- **Past Business Conditions**
  Past sales: The growth of sales volumes (adjusted for price changes) over the past 12 months (compared with the previous 12 months), was: (i) greater, (ii) less, (iii) the same.

6. Business sector GDP excludes the public sector.
7. Firm size is defined by the number of employees: small (1 to 100), medium (101 to 500), or large (more than 500). Each quarter, the aim is to balance the sample with approximately one-third each of small, medium, and large firms.

- **Outlook for Business Activity**

  Future sales: The growth of sales volumes over the next 12 months (compared with the past 12 months) is expected to be: (i) greater, (ii) less, (iii) the same.

  Investment intentions, machinery and equipment: The level of investment spending on machinery and equipment over the next 12 months is expected to be: (i) higher, (ii) lower, (iii) the same.

  Investment intentions, buildings: The level of investment spending on buildings over the next 12 months is expected to be: (i) higher, (ii) lower, (iii) the same.

  Outlook for employment: The number of employees (full-time equivalent) employed by your organization over the next 12 months is expected to be: (i) higher, (ii) lower, (iii) the same.

- **Pressures on Production Capacity**

  Ability to meet demand: Currently, the potential level of difficulty in meeting an unexpected increase in demand or sales would be: (i) no difficulty (operating below capacity), (ii) some difficulty (at or near full capacity), (iii) significant difficulty (operating above capacity).

  Labour shortages: The organization is facing shortages of labour that restrict the ability to meet demand: (i) yes, (ii) no.

  Inventory imbalances: Compared with the desired level of inventories, the current level is: (i) too high, (ii) too low, (iii) about right.

- **Outlook for Wages, Prices, and Inflation**

  Outlook for wages: The increase in labour costs (per hour) over the next 12 months is expected to be: (i) greater, (ii) less, (iii) the same.

  Outlook for input prices: The increase in the prices of products or services purchased over the next 12 months is expected to be: (i) greater, (ii) less, (iii) the same.

  Outlook for output prices: The increase in the prices of products or services that are sold over the next 12 months is expected to be: (i) greater, (ii) less, (iii) the same.

  Inflation-expectations index: The firm's expectation for the average annual rate of CPI inflation over the next two years is: (i) above 3 per cent, (ii) 2 to 3 per cent, (iii) 1 to 2 per cent, (iv) below 1 per cent.

Businesses are asked to provide qualitative responses about their business activity. Questions about the volume of sales exclude the influence of price changes and seek information on real activity. The questions on the outlook for sales, wages, and prices are expressed in terms of momentum (changes in year-over-year rates of growth), to obtain a business perspective on how the environment is changing. Seasonal influences on responses are avoided by asking about expectations over the next 12 months (or two years, in the case of inflation expectations).

From time to time, supplementary questions that pertain to issues of topical importance to monetary policy decisions are introduced. Examples of issues addressed by recent supplementary questions include the effects of global uncertainty on investment spending and the impact of the sharp appreciation of the Canadian dollar. Although the supplementary questions have certainly

added to the usefulness of the survey, they cannot be analyzed systematically and are therefore not included in the analytic work of this article.

Special topics, sometimes explored in a separate survey, have also been introduced to gain further insight into the effects on firms of restructuring, dollarization, and price-setting behaviour. These survey topics have been interpreted and evaluated independently.[8]

4. Assessing the Business Outlook Survey

4.1 The time series

The assessment of the BOS reported in this paper is based on 24 quarterly surveys, from 1997Q3 through to, and including, 2003Q2. The question on firms' ability to meet demand was introduced only in 1999Q3, limiting the number of quarterly surveys available for this question to 16, rather than the full 24.

During the survey's first three years, the BOS consultations were conducted with companies three times a year and with industry associations once a year (during the second quarter). The same questions were employed for both companies and associations (with the exception of the question on inventory imbalances, which was not asked of associations). Following the association visits of 2000, the decision was made to base the BOS exclusively on interviews with companies in order to improve the consistency of the time series.[9] Given the short sample available, the three data points based on the association visits are included in the time series. These three observations are highlighted in the charts in Appendix A.[10]

The survey questions typically use a three-part scale for measuring qualitative responses: positive/higher, no change/the same, or negative/lower. A balance of opinion is a useful way of summarizing these types of responses. The balance-of-opinion data are constructed by subtracting the proportion of negative responses from the proportion of positive responses. Values can range from –100 to +100. For example, a positive balance of opinion for the question on future sales

8. For a summary of the results of these surveys, see Kwan (2002) and Murray and Powell (2002, 2003). Results of the survey on price-setting behaviour, which was conducted in 2003, are currently being analyzed.
9. Industry associations have a unique perspective and are still contacted regularly by Bank regional office staff for their views.
10. The charts indicate that companies and associations have different perceptions regarding the extent of labour shortages. As a result, for the question on labour shortages we present the correlation results for a sample that excludes the three observations from the association visits.

implies that more respondents are expecting sales momentum (an increase in the growth rate of sales volume) to be positive than are expecting it to be negative.[11]

The responses to questions on firms' ability to meet demand and on labour shortages are summarized as the percentage of respondents experiencing constraints. For the question on inflation expectations, respondents are offered a range of quantitative options for their reply, and an index is constructed to summarize the results. The index is calculated as an average of the midpoints of the response options weighted by the proportion of responses for each option.[12]

The statistical reliability of the survey results is limited by the small sample size. Objectives are set for the number of firms selected by region, industry type, and firm size, for a total of 100 interviews each quarter. This method of sample selection is referred to as quota sampling. While an effort is made to choose a sample that is representative of the Canadian economy, this is *not* a random sample. Therefore, its statistical properties are difficult to ascertain.[13]

4.2 Evaluating the information content of the data

A straightforward approach is used to evaluate the information provided by the BOS, given the short time series available for analysis (the 24 quarters from 1997Q3 to 2003Q2). As a first step, the BOS survey time series are plotted against comparable variables of economic activity. These charts provide visual evidence of the signalling properties of the survey data. Large changes in the balance-of-opinion data are of particular interest.

The BOS involves only private sector companies so that, wherever data sources are available, responses are compared with data for the private sector only. The economic time series are also transformed into measurement units that match the formulation of the survey question as closely as possible. For example, responses to questions about changes in activity over the next year are

11. Specifically, in response to a question on a firm's expected rate of future sales, if 60 per cent of respondents indicate a greater rate, 30 per cent indicate the same rate, and 10 per cent indicate a lesser rate, then the balance of opinion is +50 per cent. The proportion of negative responses (10 per cent) is subtracted from the proportion of positive responses (60 per cent).

12. Before 2001Q2, the index is the weighted average of three options: index = (percentage of respondents expecting < 1 per cent) x 0.005 + (percentage of respondents expecting 1 to 3 per cent) x 0.02 + (percentage of respondents expecting > 3 per cent) x 0.035. From 2001Q2, the index is a weighted average of the four options: index = (percentage expecting < 1 per cent) x 0.005 + (percentage expecting 1 to 2 per cent) x 0.015 + (percentage expecting 2 to 3 per cent) x 0.025 + (percentage expecting > 3 per cent) x 0.035. There is no midpoint for the < 1 per cent and > 3 per cent options. Given the inflation environment of this sample, 0.5 per cent and 3.5 per cent are chosen to represent these options.

13. By comparison, the 95 per cent confidence interval for responses from a random sample of 100 would generally be assessed at +/– 10 percentage points.

compared with year-over-year growth rates in economic activity. Responses to questions about the expected change in the rate of increase of activity or prices are compared with measures of GDP or price momentum over the comparable period (i.e., changes in year-over-year growth rates).

To evaluate the indicator properties of some of the questions, comparisons are also made with measures of economic activity of particular interest to the Bank. For example, the responses to the questions relating to pressures on production capacity are compared with the Bank's estimate of the output gap.[14] The responses to the question on output prices are compared with CPI inflation.

Simple pair-wise correlations between the survey data and the economic activity variables are calculated to obtain a measure of the strength of the relationship between the BOS data and official economic data. To test the timing of the relationship, correlations of both leading and lagging values of the economic variables are examined. The outlook questions have a 4-quarter horizon, so one might expect the highest correlations with the 4-quarter lead. Certain influences, however, may cause the timing of the relationship with the actual economic data to be different. For example, the world changes in unexpected ways; respondents may formulate outlooks based on past experience, or there may be measurement differences between business evaluations and economic data.

With only 24 observations, the 95 per cent confidence bands for the correlation coefficients are quite wide. The following rough scale of assessment is used to evaluate the correlation coefficients: strong, > 0.80; moderately strong, 0.80 to 0.60; moderate, 0.60 to 0.40; weak, 0.40 to 0.20; insignificant, < 0.20.

5. The Results

We emphasize that, at this point in time, there is a relatively small number of time series observations from the BOS (generally, 24 observations). This limits the confidence level for the results. Indeed, small shifts in the sample can significantly alter conclusions about the strength of the information content of the BOS series.

In this section, each of the core questions of the BOS is evaluated individually. The questions are grouped into the four categories identified in section 3.2: past business conditions; outlook for business activity; pressures on production capacity; and outlook for wages, prices, and inflation.

14. The estimate of the output gap used for the analysis in this paper is from the Bank's 2003 projection, which was published in the October 2003 *Monetary Policy Report* (Bank of Canada 2003).

Charts and correlation tables are presented in Appendix A. The first page of Appendix A also defines the terminology used in this section.

5.1 Past business conditions

To set the stage for the BOS questions on the business outlook and production capacity, firms are asked to describe their sales experience over the past year. This information can also provide a timely barometer of recent economic activity.

The question asks whether the growth of sales volumes over the past 12 months has been greater than, less than, or the same as that over the previous 12 months. The balance of opinion is the percentage of respondents answering "greater" minus the percentage answering "less."

Overall, the results suggest that firms' past sales experience has been a moderately strong to strong cyclical indicator and that it could be used as a preliminary signal or check on official data, especially when there is uncertainty regarding preliminary estimates of economic growth.

The balance of opinion is compared with real business sector GDP momentum,[15] a measure of economic activity expected to closely match the sample and wording of the question. Chart 1a shows that the balance of opinion for past sales tracks the broad cyclical movements in real business sector GDP momentum relatively well over much of the sample. Correlation analysis confirms that the BOS results are moderately strongly correlated with real business sector GDP momentum at 0.68 in quarter $t - 1$ (see Table 1a). During 2000, however, the BOS results suggest that economic activity continued to accelerate, whereas real business sector GDP momentum was actually beginning to slow (although the economy remained strong in terms of nominal and real GDP growth).

It is possible that the sample of firms surveyed does not fully capture the activities represented in the GDP measures, particularly in 2000. It is also possible that the misleading signals in 2000 are the result of response errors. Perhaps responses to the question on past sales are more often based on real or nominal growth than real momentum. This error could arise because firms' financial statements more typically focus on growth than momentum measures.[16]

Comparisons with real business sector GDP growth (Chart 1b) and nominal GDP growth[17] (Chart 1c) reveal that responses for this question do track these growth measures more closely than

15. See Appendix A for a definition of momentum.
16. To mitigate this problem, interviewers typically ask probing questions to improve the accuracy of responses.
17. Business sector GDP growth is not available as a nominal series.

momentum, particularly during 2000. Correlation results for real business GDP growth are strong at 0.80 in t and 0.83 in $t - 1$ (Table 1b). For nominal GDP growth, the correlations are moderately strong at 0.74 in t and 0.65 in $t - 1$ (Table 1c).

5.2 Outlook for business activity

The BOS gauges firms' one-year outlook for their sales momentum, investment, and employment growth.

We find that the questions on business outlook do not consistently predict future activity. Large changes in the balance of opinions have provided some leading signals. The questions in this category ask about expected activity over the next year (next 4 quarters). The results suggest that the firms' predictions regarding developments over the next 4 quarters ($t + 4$) are closer to what actually occurs over the next 2 quarters ($t + 2$).

5.2.1 Future sales

The question on future sales asks firms whether they expect the growth of their sales volumes over the next year to be greater than, less than, or the same as that over the past year.

The balance of opinion (greater rate–lesser rate) is compared with real business sector GDP momentum. Chart 2a illustrates that this question does not track the smaller changes in this GDP measure consistently over this period. On the other hand, it does appear to do well at signalling large changes in momentum. Specifically, in 1999Q1, a large upward shift in the balance of opinion precedes a surge in the rate of GDP growth; in 2000Q2, a significant drop in the balance of opinion predicts a corresponding drop in the rate of GDP growth; and in 2002Q1, an upward swing in the balance of opinion coincides with the beginning of a recovery in GDP growth. The correlations indicate that this is a moderate indicator of future activity 1 to 2 quarters ahead (0.54 for $t + 1$, 0.50 for $t + 2$).

As with the question about past sales, we also compare the outlook for future sales with real and nominal GDP growth (Charts 2b and c). The correlations with real business sector GDP growth are weak, with the strongest correlation at 0.36 for $t + 2$ (Table 2b). There is a stronger correlation with nominal GDP growth at 0.57 for $t + 2$ (Table 2c). This is a moderate result, but only slightly stronger than the correlation with the real momentum measure.

5.2.2 *Investment intentions*

The BOS questionnaire asks two questions about investment intentions: one on planned investment in machinery and equipment, and the other on investment in buildings. The question about machinery and equipment is of primary interest, because this type of activity is most likely to signal cyclical developments. On average, approximately 20 per cent of respondents answer "not applicable" to the question on investment in buildings.

Firms are asked whether, compared with the previous year, their anticipated level of investment spending over the next year will be higher, lower, or about the same. The balance of opinions for investment intentions regarding machinery and equipment, and for those regarding buildings, are compared with Statistics Canada measures of private business investment for machinery and equipment and those for buildings. The economic variables are constructed as year-over-year growth rates.

The comparisons with official data suggest a poor relationship over the first half of the sample and a stronger relationship over the second half (Charts 3a and b). From 1998Q3 through 1999Q3, respondents' investment intentions are, in aggregate, quite volatile, changing from very weak outlooks to very positive outlooks each quarter, perhaps reflecting some uncertainty regarding the future. In fact, actual investment growth turned out to be quite strong and steady throughout 1999 and much of 2000.

Correlation results are moderate to weak. Investment intentions for machinery and equipment have the strongest leading signals, with correlations at 0.41 for 2 quarters ahead ($t + 2$) (Table 3a). Investment intentions for buildings are weaker, with the highest forward-looking correlation at 0.29 for $t + 4$ (Table 3b).

5.2.3 *Outlook for employment*

The question on employment asks firms whether their expected level of employment over the next year will be higher, lower, or about the same. The balance-of-opinion results (higher–lower) are compared with private sector employment growth (year-over-year).

The graph (Chart 4) and correlations (Table 4) suggest that responses to this question provide moderate information, with the highest correlation coefficient at 0.55 for 2 quarters ahead ($t + 2$). Responses to this question also provide some leading signals. The optimistic outlook for employment in 1997, and through 1999 and 2000, is consistent with the Canadian experience of strong employment growth during those periods. On the other hand, respondents are particularly

pessimistic about employment growth from 1998Q3 to 1999Q1, when in fact employment growth remained very strong through 2000. Again in 2001Q4, the balance of opinion indicates a very weak outlook for employment growth, yet employment grew strongly in the following quarters. These very negative outlooks in 1998Q3 and 2001Q4 are, however, consistent with the very negative responses from business during the same quarters to the questions on future sales and investment intentions.

5.3 Pressures on production capacity

The responses to the BOS questions on production-capacity pressures may be useful as proxy indicators for production-capacity constraints, labour shortages, inventory imbalances, and the output gap. The results are of particular importance because data on this subject are limited. The timeliness of the BOS data is another advantage.

5.3.1 Ability to meet demand

The question on the ability to meet demand is designed to provide insight into the scarcity of production resources and thereby provide leading signals on the output gap. Firms are asked to gauge the degree of difficulty they would have in meeting an unexpected increase in demand. Respondents indicate "no difficulty," "some difficulty," or "significant difficulty." The percentage of responses that indicate "some" or "significant difficulty" is combined to provide an indication of production-capacity constraints. This question was added to the BOS in 1999Q3, and so only 16 quarterly observations are used in the analysis.

Comparisons are made between Statistics Canada's measure of the industrial capacity utilization rate and the Bank's estimate of the output gap. Periods when respondents signal potentially greater difficulty meeting unexpected demand are expected to be positively correlated with high rates of capacity utilization and periods of excess demand as measured by the output gap.

The responses to the question on the ability to meet demand track both the industrial capacity utilization rate and the estimate of the output gap very well (Charts 5a and b). The correlation analysis produces strong results, with correlation coefficients of 0.88 at $t + 1$ for the industrial capacity utilization rate and 0.77 at $t + 1$ for the output gap (Tables 5a and b).

These results suggest that the question could be viewed as a proxy for capacity utilization and the output gap. An advantage of these survey results is that they capture capacity pressures in both the goods and the services industries, whereas the measures of industrial capacity utilization focus only on industrial goods production.

5.3.2 Labour shortages

The question on labour shortages asks firms whether they currently face shortages of labour that restrict their ability to meet demand ("yes" or "no"). The question is designed to measure the scarcity of resources in the labour market, and to provide a signal of wage and output-gap pressures arising from employment conditions.[18]

The percentage of respondents who answered yes (face labour shortages) is compared with the wage growth (as measured by the Labour Force Survey (LFS) data) and the Bank's estimate of the output gap. The BOS data appear to provide better wage and output-gap signals over the latter half of the sample (Charts 6a and b).

The charts for labour shortages also show that the responses based on visits with associations (1997Q3, 1998Q3, and 1999Q3) appear to be biased upward relative to the rest of the responses. For this reason, correlations for this question are presented excluding the association data.

The correlations with wage growth (Table 6a) are moderately strong for both the current quarter and $t-1$ at 0.66. For the period 1999 through 2000, an increasing percentage of firms experience labour shortages. This period of labour market tightness coincides with a period of higher wage growth. More recently, labour shortages and wage growth have both fallen.

Over the full sample, labour shortages provide a moderate signal of the output gap at 0.43 for quarters t and $t-1$ (Table 6b). However, we would expect responses to this question to signal only output-gap movements that arise because of pressures that occur in the labour market. The responses indicate the greatest labour market tightness during the year 2000, which does coincide with a peak in the Bank's output-gap estimate.

5.3.3 Inventory imbalances

Undesired accumulations or depletions of inventories may signal unanticipated changes in demand pressures. The question on inventory imbalances asks firms whether their current level of inventories, compared with their desired level, is "too high," "too low," or "about right." The balance-of-opinion series is created by subtracting the percentage of respondents who answer "too low" from the percentage who answer "too high."[19]

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18. The question on labour shortages originally asked about "skilled" labour shortages. In June 2001, the word "skilled" was dropped to make the question more general.
19. The results for this question are based on a much smaller sample of respondents than the other questions, since, on average, approximately 40 per cent of firms answer "not applicable." The time-series sample is also shorter, because this question was not asked during the visits with industry associations; therefore, there are no observations for 1998Q2, 1999Q2, or 2000Q2.

The balance of opinion is compared with quarterly real business sector GDP growth and the output-gap estimate. A negative correlation would be expected. Firms may choose to scale back production when inventories are above desired levels, or increase production when levels are low. Desired inventory balances may be "too low" when capacity pressures are high.

Charts 7a and b demonstrate that, although the question on inventory imbalances does not track economic cycles very well over the full sample, it provides some particularly strong and accurate signals. For example, in 2001Q1, the balance of opinion rises significantly, indicating a large percentage of firms with higher-than-desired inventories, while, at the same time, real GDP growth and the output gap drop sharply. In 2002Q2 and 2002Q3, a sharp drop in the balance of opinion for inventory imbalances follows the rebound in real GDP growth, and indicates some potential for further growth.

5.4 Outlook for wages, prices, and inflation

The responses to these questions provide measures of business expectations about future wage and price pressures. Firms are asked for their outlook, over the next 12 months, for their wages, input prices, and output prices. The responses for the wage question do not appear to provide consistently strong information compared with other official data series. On the other hand, the questions on input and output prices are found to provide strong leading signals of price momentum.

A final question asks firms about their CPI inflation expectations over the next two years, to obtain a proxy measure for inflation expectations.

5.4.1 Outlook for wages

The question on wages asks whether the expected increase in the firm's own labour costs (wages/hour), for the next year, will be higher, lower, or about the same. Comparisons are made with two measures of wages: Labour Force Survey data for average hourly earnings in the private sector, and business sector compensation per hour (Charts 8a and b).[20]

The two official data measures of wage momentum tell different stories over this sample. The BOS balance-of-opinion results, however, do not appear to consistently predict either measure (Charts 8a and b). The strongest correlations with the Labour Force Survey data are found for quarter $t - 1$ at 0.69 and for the current quarter at 0.58. This suggests that the outlook for wages is

20 The Labour Force Survey data for earnings are based on employee responses on earnings and do not include benefits. These series are available only from 1997, which means that the constructed wage momentum variables begin in 1999Q1 (8 quarters of data are required to calculate momentum). The definition of business sector compensation includes income, benefits, and bonuses.

based on current wage information. The highest correlations for leading signals occurs at quarters $t + 1$ and $t + 2$, but both are moderate correlations at 0.47 and 0.46, respectively (Table 8a). The correlation results for the business sector compensation variable have the strongest result at 0.49 for the current quarter, and provide weak leading information for the next quarter (Table 8b).[21]

Over the BOS sample period (1997Q3 to 2003Q2), a consistently high proportion of respondents—on average, 60 per cent—indicate that they expect the rate of wage increases at their firms to "remain the same" over the next year. These results imply that, for the majority of respondents, the outlook for wage inflation has been very stable.

5.4.2 Outlook for input prices

The question on input prices asks firms whether, over the next 12 months, they expect prices of their inputs (products and/or services that they purchase) to increase at a greater rate, lesser rate, or the same rate compared with the prices of their inputs over the past year. The responses are compared with the GDP deflator momentum, which is a broad measure of the prices of both goods and services.[22]

Chart 9 shows that the balance-of-opinion results track the broad cyclical movements of the GDP deflator momentum quite well. The BOS responses provide an advance indication of the sharp rise in the GDP deflator momentum that occurs during 2002, and the subsequent decline in momentum in 2003. The correlation results indicate that the survey responses provide moderately strong leading signals for the next-quarter prices at 0.72 for $t + 1$ (Table 9). These results suggest that the responses to this question provide useful information for monitoring price developments.

5.4.3 Outlook for output prices

The question on output prices asks firms about expected increases in the prices of their outputs (products and/or services that they sell) over the next year compared with increases in the prices of those outputs over the past year. The balance-of-opinion data are compared with the GDP deflator momentum and total CPI momentum. It is interesting to examine the signal properties of output prices with respect to total CPI, since this is the Bank's key policy target.

Charts 10a and b demonstrate the strength of the BOS responses on output prices. They appear to have predictive power for both the GDP deflator momentum and CPI momentum. For example, a

21. The correlations with the business compensation variable are calculated over a longer sample than the correlations with the Labour Force Survey data.
22. A measure of the GDP price deflator for the business sector is not available.

large upward swing in the balance of opinion early in 2002 precedes the increase in price momentum that occurs later that year. In 2002Q4, the balance of opinion swings negative and provides accurate leading signals of the decline in actual price momentum that follows. Correlations indicate that the BOS data provide moderately strong leading signals for the GDP deflator momentum in $t + 1$, at 0.64 (Table 10a), and for CPI momentum in $t + 2$, at 0.75 (Table 10b).

5.4.4 Inflation-expectations index

The question on inflation expectations asks firms about their two-year outlook for CPI inflation. Respondents are asked to indicate the range of their inflation expectations based on four options: < 1 per cent, 1 to 2 per cent, 2 to 3 per cent, and > 3 per cent.[23] These response options are chosen to gauge the range of expectations relative to the Bank's inflation-control target for total CPI inflation of 2 per cent within a target range of 1 to 3 per cent.

An inflation-expectations index is created using a weighted average of the BOS response options. The mid-range of each response option is weighted by the percentage of respondents who choose that option.[24] A comparison is then made between the inflation-expectations index (based on respondents' two-year outlook) and a two-year average of total and core CPI inflation. These quarterly CPI variables are constructed so that CPI$t + 8$ is the average rate of inflation over the next two years and matches the outlook of the question. In the same way, the current quarter of this measure, CPIt, is the average rate of inflation over the past two years (information available to respondents at the time of the survey).[25]

Charts 11a and b show that the inflation-expectations index has fluctuated within a relatively narrow range very close to the Bank's inflation target of 2 per cent. Expectations have been well anchored over the sample period. From 1997Q3 to early 2000, the inflation-expectations index is virtually unchanged.

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23. From 1997Q3 to 2001Q1, the inflation-expectations question was not as precise, allowing only three response options: < 1 per cent, 1 to 3 per cent, > 3 per cent. In 2001Q2, the question was modified to allow respondents to distinguish between inflation expectations of 1 to 2 per cent and 2 to 3 per cent.
24. Before 2001Q2, the index was the weighted average of three options: index = (percentage of respondents expecting < 1 per cent) x 0.005 + (percentage of respondents expecting 1 to 3 per cent) x 0.02 + (percentage of respondents expecting > 3 per cent) x 0.035. From 2001Q2, the index is a weighted average of the four options: index = (percentage expecting < 1 per cent) x 0.005 + (percentage expecting 1 to 2 per cent) x 0.015 + (percentage expecting 2 to 3 per cent) x 0.025 + (percentage expecting > 3 per cent) x 0.035. There is no midpoint for the < 1 per cent and > 3 per cent options. Given the inflation environment of this sample, 0.5 per cent and 3.5 per cent are chosen to represent these options.
25. This is the same methodology used for other questions, and simply reflects the expanded outlook horizon of this question.

The correlation results indicate a moderately strong relationship between the inflation-expectations index and total CPI inflation in the current quarter (0.78 [t]), and weaker correlations over the outlook period (Table 11a). Correlations with core CPI inflation are strong for the outlook period, with correlations at 0.85 ($t + 7$) and 0.72 ($t + 8$) (Table 11b). These results suggest that firms' inflation expectations are influenced by the current total CPI inflation environment, but have more accurately predicted the movements in core CPI inflation, which abstract from the more volatile components of CPI, such as movements in energy prices. For example, in 2003, the rise and fall in the index may be interpreted as a response to the total inflation environment. On the other hand, the correlations with core CPI inflation suggest the index may provide a leading signal of inflation pressures.

Although there are strong positive correlations with CPI inflation, the magnitude of the movements in the inflation-expectations index have been very small relative to those in the CPI measures.

6. Summary of Assessment

Overall, the charts in Appendix A indicate that large changes in the balance of opinion appear to signal changes in comparable economic variables.

The question on past sales experience provides a timely barometer of current economic activity and sets the stage for the questions on business outlook and production capacity.

The questions on business outlook do not consistently predict future activity. Large changes in the balance of opinion, however, appear to provide leading signals. Firms' predictions regarding economic developments over the next 4 quarters are closer to what actually occurs over the next 2 quarters.

The responses to questions on pressures on production capacity provide potentially useful proxy indicators for constraints on production capacity, labour shortages, inventory imbalances, and the output gap.

The questions on input prices and output prices provide moderately strong signals of price momentum 1 to 2 quarters in advance.

Firms' views about the average rate of CPI inflation over the next two years have been well anchored around the Bank's 2 per cent inflation target.

Box 1 summarizes the assessment of the correlation results.

Box 1: Assessment of the Correlation Results

Survey variable	Economic variable	Correlation
Past business conditions		
Past sales	Momentum* of real business GDP	moderately strong: $t-1$
Past sales	Growth of real business GDP	strong: $t-1$, t
Past sales	Growth of nominal GDP	moderately strong: $t-1$, t, $t+1$
Outlook for business activity		
Future sales	Momentum of real business GDP	moderate: $t+1$, $t+2$
Future sales	Growth of real business GDP	weak: $t+1$, $t+2$
Future sales	Growth of nominal GDP	moderate: $t+1$, $t+2$
Investment intentions, machinery and equipment	Growth of business investment, machinery and equipment	moderate: $t+2$
Investment intentions, buildings	Growth of business investment, buildings	weak: $t+4$
Outlook for employment	Growth of private sector employment	moderate: $t+2$
Pressures on production capacity		
Ability to meet demand	Industrial capacity utilization rate	strong: t, $t+1$
Ability to meet demand	Output gap	moderately strong: t, $t+1$
Labour shortages	Wage growth	moderately strong: $t-1$, t, $t+1$
Labour shortages	Output gap	moderate: $t-1$, t
Inventory imbalances	Quarterly growth of real business GDP	weak: $t-1$, t
Inventory imbalances	Output gap	weak: $t-1$
Outlook for wages, prices, and inflation		
Outlook for wages	Momentum of LFS earnings	moderate: t, $t+1$, $t+2$
Outlook for wages	Momentum of business sector compensation	moderate: t; weak: $t+1$
Outlook for input prices	Momentum of the GDP deflator	moderately strong: $t+1$
Outlook for output prices	Momentum of the GDP deflator	moderately strong: $t+1$; moderate $t+2$
Outlook for output prices	Momentum of total CPI	moderately strong: $t+2$
Inflation-expectations index	Two-year total CPI inflation	moderately strong: t; weak beyond $t+3$
Inflation-expectations index	Two-year core CPI inflation	strong: $t+7$; moderately strong: $t+8$

*See Appendix A for a definition of momentum.

7. Conclusion

The BOS was initiated as an extension of the public consultations that the Bank of Canada has always conducted. It formalizes the consultation process and systematically summarizes much of the information obtained on the experiences of businesses.

Business perceptions and expectations are interesting in and of themselves. They are of greater value, however, if they can provide policy-makers with a more accurate understanding of current and future economic activity. The assessment reported in this paper is intended as an initial interpretation of the BOS data. On balance, the results suggest that the BOS provides informative measures of current business conditions and expected future activity. It will be important to update this analysis as the number of observations available expands, allowing for an increased degree of confidence in the results.

We emphasize that the value of the BOS goes beyond the data captured by the questionnaire. The BOS interview format allows for a broader understanding of current business perceptions through confidential discussions with business representatives, which provide invaluable information that cannot be measured quantitatively.

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Appendix A: Analytic Results

A.1 Terminology used in the charts and tables

Data are quarterly time series.

Data for time *t*: The survey balance-of-opinion data point for time *t* is the quarter when the survey data are collected. The comparable economic time series have been constructed so that *t* is the current-quarter data.

Data for time *t* + 4: The time series for comparable economic variables have been constructed so that *t* + 4 matches the 4-quarter (12-month) outlook of the forward-looking questions (future sales, investment intentions, outlook for employment, for wages, for input prices, and for output prices). In the case of the question on inflation expectations, which asks for a two-year average outlook, the constructed variable for CPI inflation, CPI*t*+8, matches this outlook.

Growth: Refers to the year-over-year growth rate.

For example,

$$GDPgrowth_t = \left(\frac{GDP_t}{GDP_{t-4}} - 1\right) \times 100.$$

Momentum: Refers to the year-to-year change in the year-over-year growth rate.

For example,

$$GDPmomentum_t = (GDPgrowth)_t - (GDPgrowth)_{t-4} =$$

$$\left[\left(\frac{GDP_t}{GDP_{t-4}} - 1\right) \times 100\right] - \left[\left(\frac{GDP_{t-4}}{GDP_{t-8}} - 1\right) \times 100\right].$$

Leads and lags ($t - x$, t, $t + x$): Refer to the quarterly timing of the relationship between the current-quarter survey results (t) and corresponding economic variables in other periods. That is, lagged correlations ($t - x$) compare survey results in time t with economic data in time $t - x$; contemporaneous correlations (t) compare survey results in time t with economic data in time t; leading correlations ($t + x$) compare survey results in time t with economic data in time $t + x$.

Example: Future sales: This question asks whether the growth of sales volumes over the next year is expected to be greater or to remain the same. The balance of opinion for the current quarter (proportion of responses indicating a greater rate minus proportion of responses indicating a lesser rate) is compared with the momentum of real business sector GDP (year-to-year change in the year-over-year growth rate). The outlook horizon for the question on future sales is one year, and so a comparison with GDP momentum over the next year (quarter $t + 4$) matches that horizon. Correlations are presented for $t - 4$...t....$t + 4$.

Association data: Shaded bars for 1998Q2, 1999Q2, and 2000Q2 indicate the results of association visits.

Interpretation of correlation coefficients—scale of assessment:

- Strong: > 0.80
- Moderately strong: 0.80 to 0.60
- Moderate: 0.60 to 0.40
- Weak: 0.40 to 0.20
- Insignificant: < 0.20

PAST BUSINESS CONDITIONS

Change in the growth rate of sales volumes over the past 12 months compared with the previous 12-month period

Balance of opinion = greater rate – lesser rate[a]

Chart 1a
Past Sales and Real Business GDP

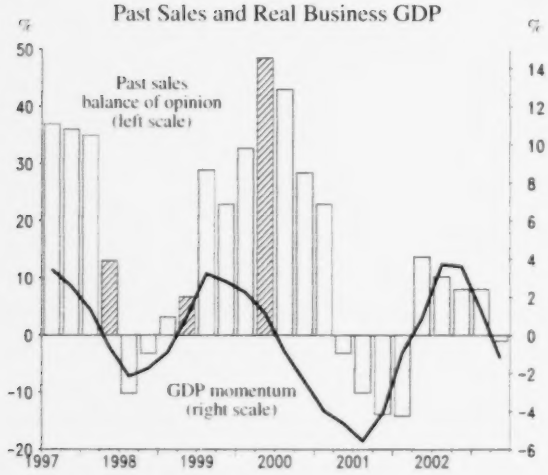


Chart 1b
Past Sales and Real Business GDP

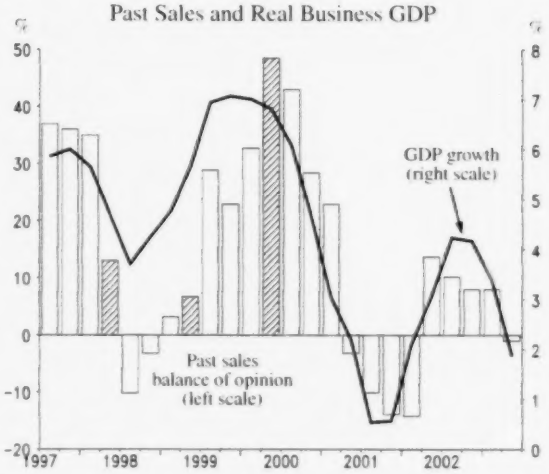
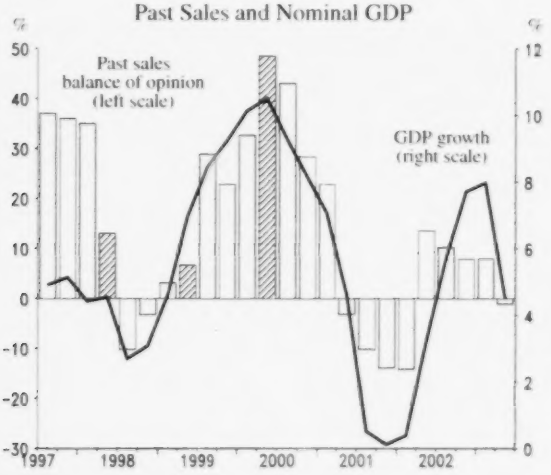


Chart 1c
Past Sales and Nominal GDP



a. Shaded bars indicate data from association visits.

Table 1a: Correlation Between Past Sales at Time *t* and the Momentum of Real Business GDP (BGDP)

$BGDP_{t-4}$	$BGDP_{t-3}$	$BGDP_{t-2}$	$BGDP_{t-1}$	$BGDP_t$	$BGDP_{t+1}$	$BGDP_{t+2}$	$BGDP_{t+3}$	$BGDP_{t+4}$
0.26	0.50	0.64	0.68	0.53	0.15	–0.35	–0.76	–0.90

Table 1b: Correlation Between Past Sales at Time *t* and the Growth of Real Business GDP (RGDP)

$RGDP_{t-4}$	$RGDP_{t-3}$	$RGDP_{t-2}$	$RGDP_{t-1}$	$RGDP_t$	$RGDP_{t+1}$	$RGDP_{t+2}$	$RGDP_{t+3}$	$RGDP_{t+4}$
0.06	0.35	0.64	0.83	0.80	0.55	0.16	–0.22	–0.45

Table 1c: Correlation Between Past Sales at Time *t* and the Growth of Nominal GDP (NGDP)

$NGDP_{t-4}$	$NGDP_{t-3}$	$NGDP_{t-2}$	$NGDP_{t-1}$	$NGDP_t$	$NGDP_{t+1}$	$NGDP_{t+2}$	$NGDP_{t+3}$	$NGDP_{t+4}$
–0.03	0.22	0.47	0.65	0.74	0.62	0.28	–0.12	–0.51

OUTLOOK FOR BUSINESS ACTIVITY

Change in the growth rate of sales volumes over the past 12 months compared with the previous 12-month period

Balance of opinion = greater rate – lesser rate[a]

Chart 2a
Future Sales and Real Business GDP

Chart 2b
Future Sales and Real Business GDP

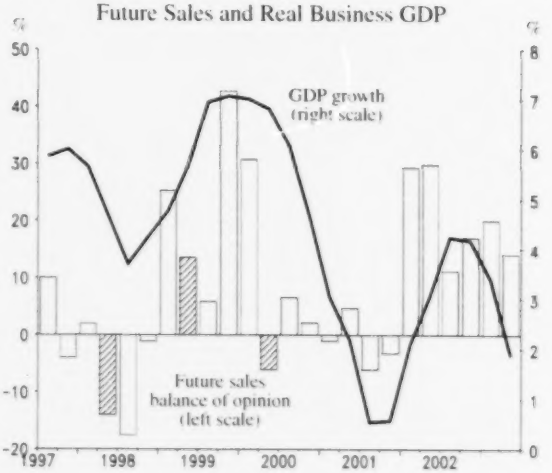
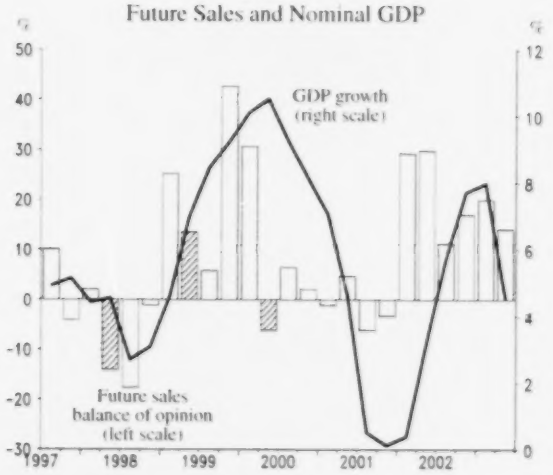


Chart 2c
Future Sales and Nominal GDP



a. Shaded bars indicate data from association visits.

Table 2a: Correlation Between Future Sales at Time *t* and the Momentum of Real Business GDP (BGDP)

$BGDP_{t-4}$	$BGDP_{t-3}$	$BGDP_{t-2}$	$BGDP_{t-1}$	$BGDP_t$	$BGDP_{t+1}$	$BGDP_{t+2}$	$BGDP_{t+3}$	$BGDP_{t+4}$
–0.58	–0.44	–0.15	0.21	0.43	0.54	0.50	0.18	–0.26

Table 2b: Correlation Between Future Sales at Time *t* and the Growth of Real Business GDP (RGDP)

$RGDP_{t-4}$	$RGDP_{t-3}$	$RGDP_{t-2}$	$RGDP_{t-1}$	$RGDP_t$	$RGDP_{t+1}$	$RGDP_{t+2}$	$RGDP_{t+3}$	$RGDP_{t+4}$
–0.43	–0.46	–0.34	–0.05	0.18	0.30	0.36	0.22	–0.12

Table 2c: Correlation Between Future Sales at Time *t* and the Growth of Nominal GDP (NGDP)

$NGDP_{t-4}$	$NGDP_{t-3}$	$NGDP_{t-2}$	$NGDP_{t-1}$	$NGDP_t$	$NGDP_{t+1}$	$NGDP_{t+2}$	$NGDP_{t+3}$	$NGDP_{t+4}$
–0.41	–0.39	–0.29	–0.03	0.24	0.50	0.57	0.46	0.22

OUTLOOK FOR BUSINESS ACTIVITY

Expected level of investment spending over the next 12 months

Balance of opinion = higher – lower[a]

Chart 3a
Investment Intentions for Machinery and Equipment and Business Investment in Machinery and Equipment

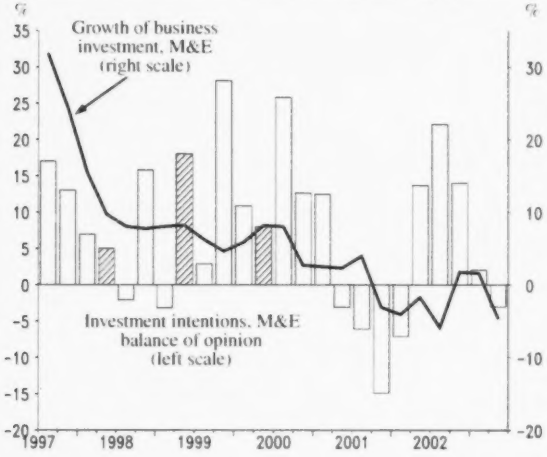
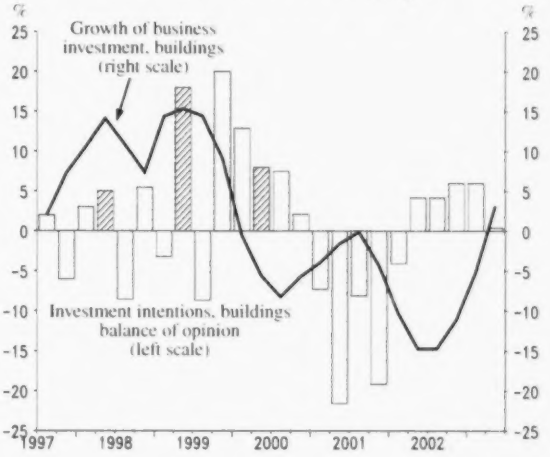


Chart 3b
Investment Intentions for Buildings and Business Investment in Buildings*



a. Shaded bars indicate data from association visits. Associations were asked one general question about total investment spending, and those results are used in both Charts 3a and b.

* The results for the question on investment intentions for buildings are based on a smaller sample of respondents. On average, 20 per cent of respondents answered "Not applicable."

Table 3a: Correlation Between Investment Intentions for Machinery and Equipment at Time *t* and Growth of Business Investment in Machinery and Equipment (INV)

INV_{t-4}	INV_{t-3}	INV_{t-2}	INV_{t-1}	INV_t	INV_{t+1}	INV_{t+2}	INV_{t+3}	INV_{t+4}
–0.03	0.02	0.08	0.18	0.28	0.31	0.41	0.30	0.15

Table 3b: Correlation Between Investment Intentions for Buildings at Time *t* and Growth of Business Investment in Buildings (INVB)

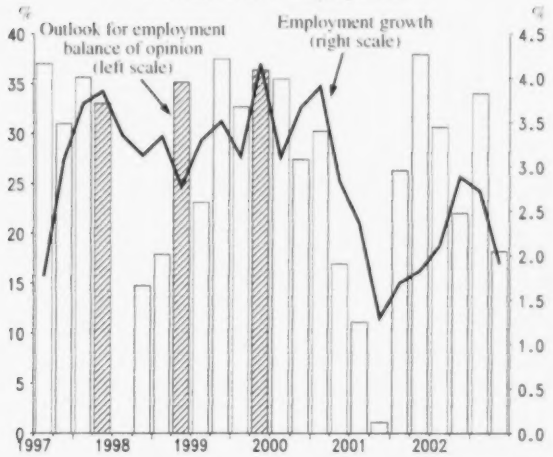
$INVB_{t-4}$	$INVB_{t-3}$	$INVB_{t-2}$	$INVB_{t-1}$	$INVB_t$	$INVB_{t+1}$	$INVB_{t+2}$	$INVB_{t+3}$	$INVB_{t+4}$
0.40	0.38	0.24	0.15	0.06	0.07	0.12	0.20	0.29

OUTLOOK FOR BUSINESS ACTIVITY

Expected level of employment over the next 12 months

Balance of opinion = higher – lower[a]

Chart 4
Outlook for Employment and
Private Sector Employment



a. Shaded bars indicate data from association visits.

Table 4: Correlation Between the Outlook for Employment at Time *t* and Growth of Private Sector Employment (EMP)

EMP_{t-4}	EMP_{t-3}	EMP_{t-2}	EMP_{t-1}	EMP_t	EMP_{t+1}	EMP_{t+2}	EMP_{t+3}	EMP_{t+4}
–0.18	–0.40	–0.46	–0.12	0.25	0.38	0.55	0.33	0.08

PRESSURES ON PRODUCTION CAPACITY

Firm's current level of difficulty in meeting an unexpected increase in demand or sales

Percentage of respondents indicating some or significant difficulty meeting increased demand[a]

Chart 5a
Ability to Meet Demand and the Industrial Capacity Utilization Rate

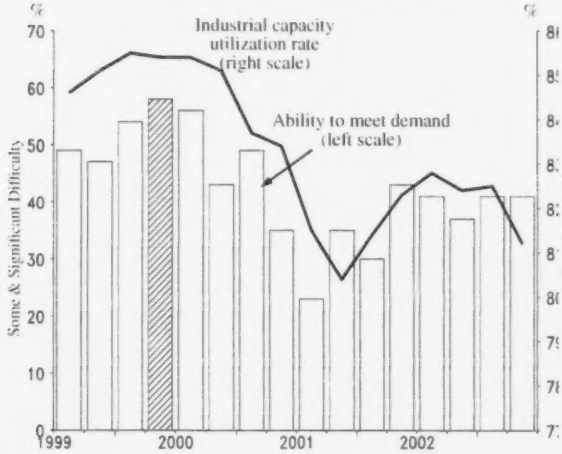
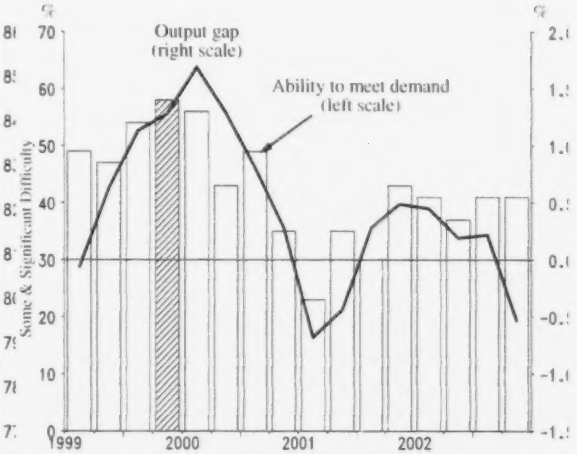


Chart 5b
Ability to Meet Demand and the Output Gap



a. Shaded bars indicate data from association visits.

Table 5a: Correlation Between Ability to Meet Demand at Time *t* and Industrial Capacity Utilization Rate (CAPU)

$CAPU_{t-4}$	$CAPU_{t-3}$	$CAPU_{t-2}$	$CAPU_{t-1}$	$CAPU_t$	$CAPU_{t+1}$	$CAPU_{t+2}$	$CAPU_{t+3}$	$CAPU_{t+4}$
–0.09	0.09	0.43	0.66	0.80	0.88	0.68	0.43	0.17

Table 5b: Correlation Between Ability to Meet Demand at Time *t* and the Output Gap (OG)

OG_{t-4}	OG_{t-3}	OG_{t-2}	OG_{t-1}	OG_t	OG_{t+1}	OG_{t+2}	OG_{t+3}	OG_{t+4}
–0.61	–0.43	0.05	0.44	0.75	0.77	0.51	0.26	0.02

PRESSURES ON PRODUCTION CAPACITY

Does the firm face shortages of labour that restrict its ability to meet demand?

Percentage of respondents answering that they do face shortages[a]

Chart 6a
Labour Shortages and Wage Growth (LFS data)

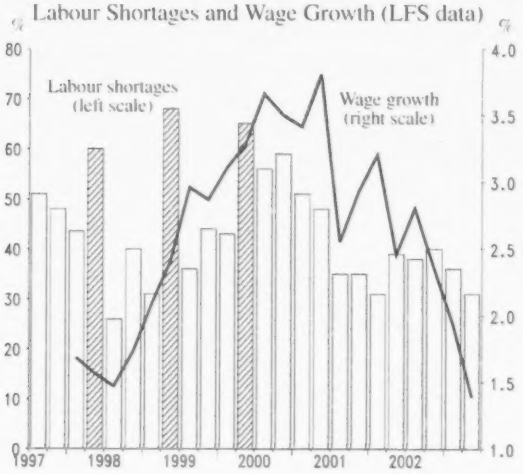
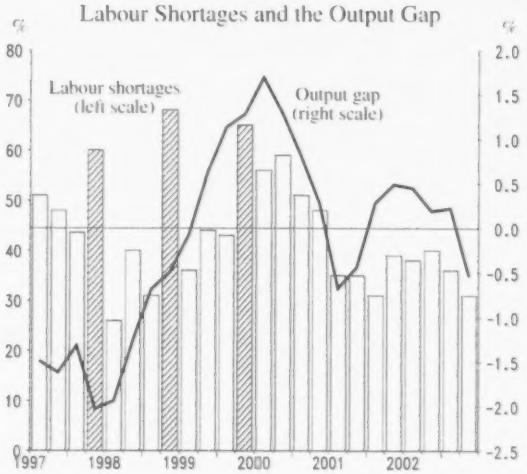


Chart 6b
Labour Shortages and the Output Gap



a. Shaded bars indicate data from association visits.

Table 6a: Correlation Between Labour Shortages at Time *t* and Wage Growth (LFS data) (WAGE), Excluding Association Data

$WAGE_{t-4}$	$WAGE_{t-3}$	$WAGE_{t-2}$	$WAGE_{t-1}$	$WAGE_{t}$	$WAGE_{t+1}$	$WAGE_{t+2}$	$WAGE_{t+3}$	$WAGE_{t+4}$
0.08	0.18	0.52	0.66	0.66	0.56	0.38	0.33	0.07

Table 6b: Correlation Between Labour Shortages at Time *t* and the Output Gap (OG), Excluding Association Data

OG_{t-4}	OG_{t-3}	OG_{t-2}	OG_{t-1}	OG_{t}	OG_{t+1}	OG_{t+2}	OG_{t+3}	OG_{t+4}
0.01	0.21	0.33	0.43	0.43	0.17	–0.13	–0.32	–0.45

PRESSURES ON PRODUCTION CAPACITY

How the current level of inventories compares with the firm's desired level of inventories

Balance of opinion = too high – too low[a]

Chart 7a
Inventory Balance of Opinion and Growth of Quarterly Real Business GDP*

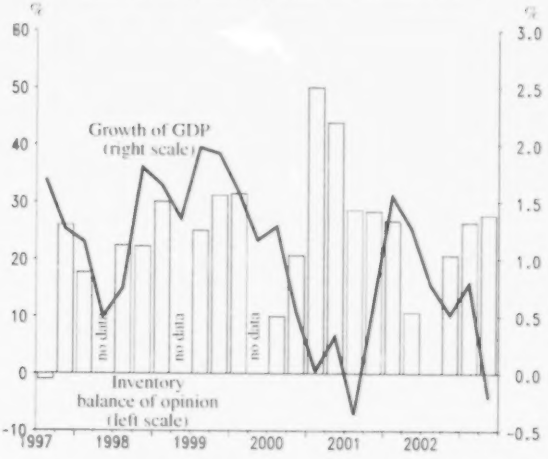
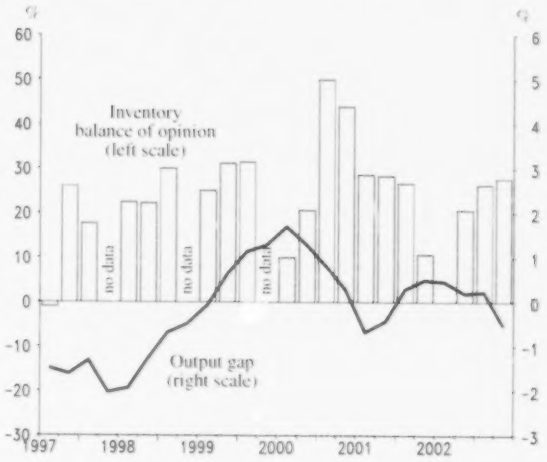


Chart 7b
Inventory Balance of Opinion and the Output Gap



a. This question was not asked during association visits in 1998Q2, 1999Q2, and 2000Q2. In 2002Q3, the balance of opinion was zero.

* The results for this question are based on a smaller sample of respondents. On average, approximately 40 per cent of respondents answered "Not applicable."

Table 7a: Correlation Between Inventory Imbalances at Time *t* and Growth of Quarterly Real Business GDP (QGDP)

$QGDP_{t-4}$	$QGDP_{t-3}$	$QGDP_{t-2}$	$QGDP_{t-1}$	$QGDP_t$	$QGDP_{t+1}$	$QGDP_{t+2}$	$QGDP_{t+3}$	$QGDP_{t+4}$
0.36	0.11	–0.26	–0.33	–0.31	–0.12	–0.04	0.36	0.33

Table 7b: Correlation Between Inventory Imbalances at Time *t* and the Output Gap

OG_{t-4}	OG_{t-3}	OG_{t-2}	OG_{t-1}	OG_t	OG_{t+1}	OG_{t+2}	OG_{t+3}	OG_{t+4}
0.42	0.42	0.33	0.23	0.13	0.13	0.11	0.39	0.61

OUTLOOK FOR WAGES, PRICES, AND INFLATION

Expected increases in labour costs (wages per hour) over the next 12 months

Balance of opinion = greater rate – lesser rate[a]

Chart 8a
Outlook for Wages and Momentum of LFS Average Hourly Earnings (excl. Public Administration)

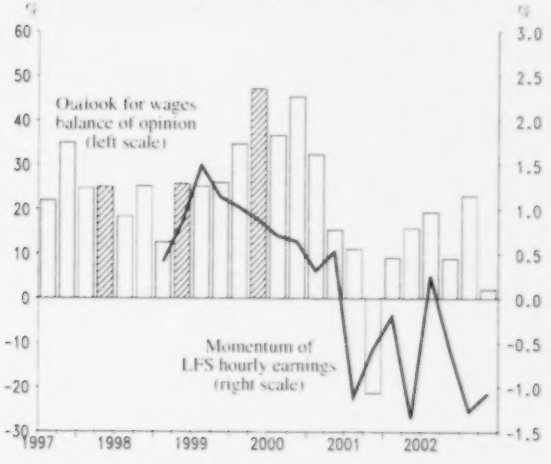
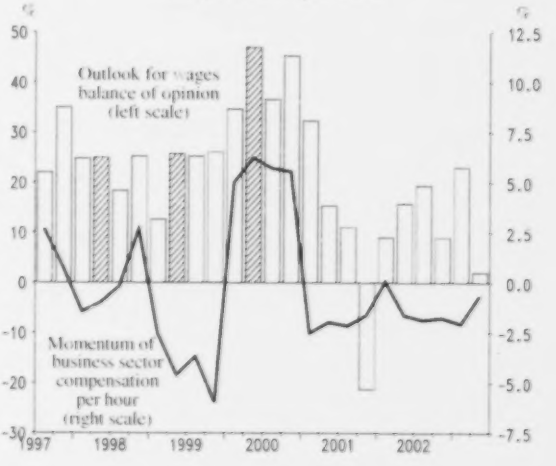


Chart 8b
Outlook for Wages and Business Sector Compensation per Hour



a. Shaded bars indicate data from association visits.

Table 8a: Correlation Between the Outlook for Wages at Time *t* and Momentum of LFS Average Hourly Earnings (excluding Public Administration) (1999Q1–2002Q4)

LFS_{t-4}	LFS_{t-3}	LFS_{t-2}	LFS_{t-1}	LFS_t	LFS_{t+1}	LFS_{t+2}	LFS_{t+3}	LFS_{t+4}
0.41	0.39	0.56	0.69	0.58	0.47	0.46	0.07	0.16

Table 8b: Correlation Between the Outlook for Wages at Time *t* and Momentum of Business Sector Compensation per Hour (BSC)

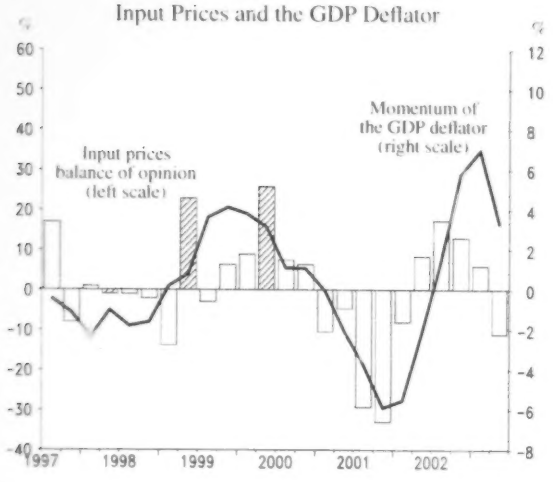
BSC_{t-4}	BSC_{t-3}	BSC_{t-2}	BSC_{t-1}	BSC_t	BSC_{t+1}	BSC_{t+2}	BSC_{t+3}	BSC_{t+4}
–0.42	0.09	0.26	0.45	0.49	0.30	0.28	0.18	0.02

OUTLOOK FOR WAGES, PRICES, AND INFLATION

Expected increases in input prices over the next 12 months

Balance of opinion = greater rate – lesser rate[a]

Chart 9
Input Prices and the GDP Deflator



a. Shaded bars indicate data from association visits.

Table 9: Correlation Between the Outlook for Input Prices at Time *t* and Momentum of the GDP Deflator (PGDP)

$PGDP_{t-4}$	$PGDP_{t-3}$	$PGDP_{t-2}$	$PGDP_{t-1}$	$PGDP_{t}$	$PGDP_{t+1}$	$PGDP_{t+2}$	$PGDP_{t+3}$	$PGDP_{t+4}$
–0.24	–0.17	0.05	0.30	0.55	0.72	0.50	0.15	–0.32

OUTLOOK FOR WAGES, PRICES, AND INFLATION

Expected increases in output prices over the next 12 months

Balance of opinion = greater rate – lesser rate[a]

Chart 10a
Output Prices and the GDP Deflator

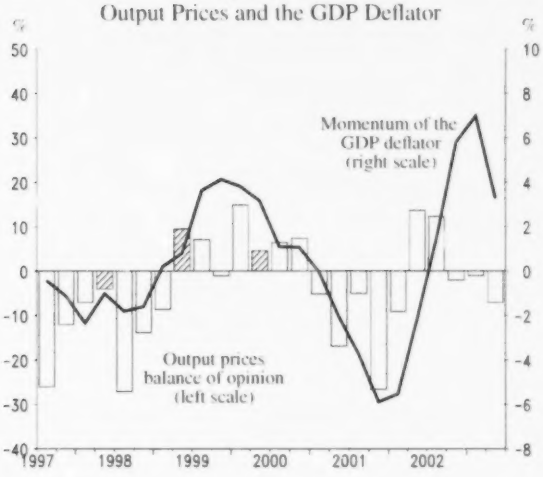
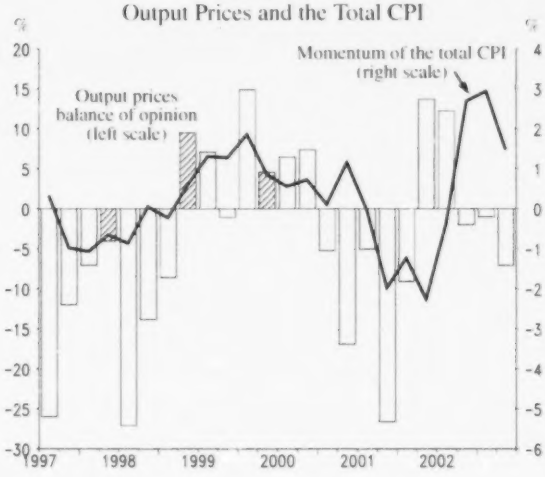


Chart 10b
Output Prices and the Total CPI



a. Shaded bars indicate data from association visits.

Table 10a: Correlation Between the Outlook for Output Prices at Time *t* and Momentum of the GDP Deflator (PGDP)

$PGDP_{t-4}$	$PGDP_{t-3}$	$PGDP_{t-2}$	$PGDP_{t-1}$	$PGDP_{t}$	$PGDP_{t+1}$	$PGDP_{t+2}$	$PGDP_{t+3}$	$PGDP_{t+4}$
–0.11	–0.05	0.08	0.24	0.50	0.64	0.54	0.23	–0.25

Table 10b: Correlation Between the Outlook for Output Prices at Time *t* and Momentum of the Total CPI

CPI_{t-4}	CPI_{t-3}	CPI_{t-2}	CPI_{t-1}	CPI_{t}	CPI_{t+1}	CPI_{t+2}	CPI_{t+3}	CPI_{t+4}
0.09	0.06	–0.07	0.08	0.29	0.49	0.75	0.40	–0.10

OUTLOOK FOR WAGES, PRICES, AND INFLATION

Expected annual rate of CPI inflation over the next two years

Index of responses*

Chart 11a
Inflation-Expectations Index and
Total CPI Inflation

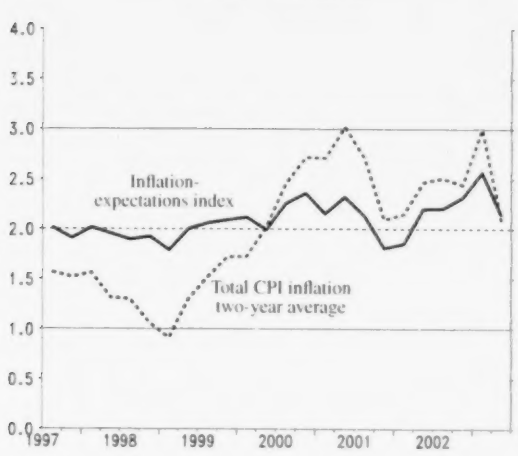
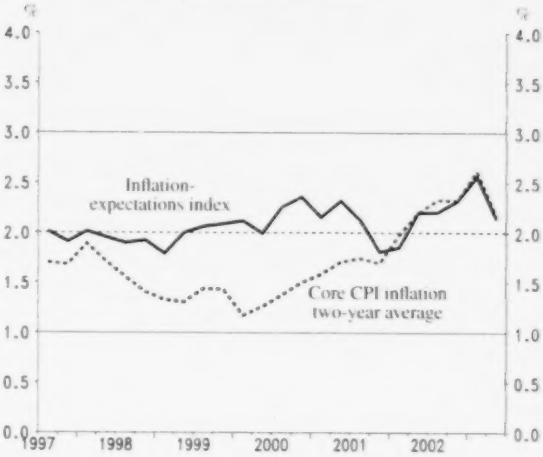


Chart 11b
Inflation-Expectations Index and
Core CPI Inflation



* Before 2001Q2, the index is the weighted average of three options: index = (percentage of respondents expecting < 1 per cent) x 0.005 + (percentage of respondents expecting 1 to 3 per cent) x 0.02 + (percentage of respondents expecting > 3 per cent) x 0.035. From 2001Q2, the index is a weighted average of the four options: index = (percentage expecting < 1 per cent) x 0.005 + (percentage expecting 1 to 2 per cent) x 0.015 + (percentage expecting 2 to 3 per cent) x 0.025 + (percentage expecting > 3 per cent) x 0.035. There is no midpoint for the < 1 per cent and > 3 per cent options. Given the inflation environment of this sample, 0.5 per cent and 3.5 per cent were chosen to represent these options.

Table 11a: Correlation Between the Inflation-Expectations Index at Time *t* and Total CPI Two-Year Average Inflation (CPIT)

$CPIT_t$	$CPIT_{t+1}$	$CPIT_{t+2}$	$CPIT_{t+3}$	$CPIT_{t+4}$	$CPIT_{t+5}$	$CPIT_{t+6}$	$CPIT_{t+7}$	$CPIT_{t+8}$
0.78	0.58	0.52	0.48	0.25	0.22	0.35	0.31	–0.02

Table 11b: Correlation Between the Inflation-Expectations Index at Time *t* and Core CPI Two-Year Average Inflation (CORE)

$CORE_t$	$CORE_{t+1}$	$CORE_{t+2}$	$CORE_{t+3}$	$CORE_{t+4}$	$CORE_{t+5}$	$CORE_{t+6}$	$CORE_{t+7}$	$CORE_{t+8}$
0.48	0.35	0.19	0.20	0.19	0.29	0.62	0.85	0.72

Appendix B: Data Sources

The data used to prepare the charts and tables were obtained from the following sources as of October 2003.

Economic variables: series name	**Source**
GDP at market prices, expenditure-based, unadjusted, current dollars	Statistics Canada: V498918
GDP at market prices, expenditure-based, unadjusted, constant 1997 dollars	Statistics Canada: V1992292
Business sector GDP at basic prices, seasonally adjusted, constant 1997 dollars	Statistics Canada: V2044313
Private sector employment, unadjusted	Statistics Canada: V2067135
Business investment (M&E), unadjusted, current dollars	Statistics Canada: V499493
Business investment (buildings), unadjusted, current dollars	Statistics Canada: V499491
Total CPI, all items, unadjusted	Statistics Canada: V735319
Core CPI, excluding 8 volatile components, unadjusted	Statistics Canada: V2007197
Total industrial capacity utilization rate	Statistics Canada: V4331081
GDP implicit price index	Statistics Canada: V1997756
Output gap, Bank of Canada estimate	Bank of Canada: 2003Q3 Projection Estimate
Business sector compensation per hour (index)	Statistics Canada:V1409158
LFS average hourly earnings wages by industry excluding public administration	Statistics Canada Labour Force Information. Catalogue 71-0001
Business Outlook Survey	Bank of Canada

Appendix C: Survey Questionnaire

Survey of Economic Conditions

Thank you for taking the time to complete this questionnaire. This is a generic survey and some questions may not directly apply to your firm. In answering the question you can adapt it to your own situation. All information obtained is treated as confidential. We would like to inform you that the Bank of Canada is subject to the Access to Information Act. However, the Act provides that information that is shown to be confidential or could be shown to prejudice the competitive position of a third party will be protected. A summary of the results, which does not reveal individual responses, will be sent to all survey participants for their use and may possibly be made available to the public.

Sales or Demand

This section focuses on changes in the rate of growth. For example, if your sales growth increased to 3% over the most recent 12-month period from 1% over the previous 12 months, mark the box "increased at a greater rate" in question 1. If your sales decreased, mark the appropriate box.

1. Compared with the previous 12-month period, sales volumes over the past 12 months (i.e. adjusted for price changes) have

increased at a greater rate	increased at a lesser rate	increased at the same rate	decreased

2. Compared with the past 12 months, sales volumes over the next 12 months (i.e. adjusted for price changes) are expected to

increase at a greater rate	increase at a lesser rate	increase at the same rate	decrease

Inventories (if applicable)

3. Compared to your desired level of inventories, the current level of inventories is

too high	too low	about right	not applicable

4. If inventories are higher or lower than your desired level, are you planning to adjust production over the next six months in order to bring inventories to the desired level?

yes	no

Ability to meet demand

5. Rate your firm's current ability to meet an unexpected increase in demand or sales.

no difficulties, operating below capacity	some difficulties, at or near full capacity	significant difficulties, operating beyond capacity

6. If you operate at near full or beyond capacity, do you expect the situation to persist over the next six months?

yes	no

Investment intentions

This section deals with the anticipated level of investment compared with the past 12 months.

7. Over the next 12 months, your investment spending on machinery and equipment will be

higher	lower	about the same	not applicable

8. Over the next 12 months, your investment spending on buildings will be

higher	lower	about the same	not applicable

Labour Markets

9. Over the next 12 months, the number of employees (full-time equivalent) at your organization will be

higher	lower	about the same

10. Over the next 12 months, increases in labour costs (wages per hour) are expected to be...

higher (eg. 2% vs 1%) lower (eg. 1% vs 2%) about the same (eg. 2% vs 2%)

11. Does your organization face shortages of labour that restrict your ability to meet demand?

yes no

(11-i) As compared to 12 months ago, are labour shortages generally

more intense less intense same intensity

Prices

12. Compared with the past 12 months, over the next 12 months the prices of the products or services that you purchase are expected to

increase at a greater rate | increase at a lesser rate | increase at the same rate | decrease

13. Compared with the past 12 months, over the next 12 months the prices of the products or services that you sell are expected to

increase at a greater rate | increase at a lesser rate | increase at the same rate | decrease

14. Over the next 2 years what do you expect the annual rate of inflation to be based on the Canadian Consumer Price Index?

below 1% between 1-2% between 2-3% above 3%

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